

CerTest

Management Guide

For

Operational AFSs

2002
Edition

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Pages: 42

Supersedes: CerTest Management Guide for CE's Operational AFSs, 1998 Edition

CerTest

CERTIFICATION AND TESTING PROGRAM

This guide outlines the policy and procedures for the CerTest program as it applies to program management and use for the Civil Engineer Operational AFSCs.

NOTE: For purposes of this guide, the *Operational AFSs* include all CE AFSCs except Fire Protection (3E7X1). For additional information on the Fire Protection CerTest procedures see the Fire Procedural Guide.

User's Guide Information. All informational documentation (guides) and help for the Windows® version of CerTest is now on-line. If you're not sure how to do something in this version of CerTest once it's installed on your computer, use the **Help** pull-down menu to receive information or instructions on the topic you need help with. The informational guides are also available for download at the HQ AFCESA website <http://www.afcesa.af.mil>.

The CerTest Management Guide for Operational AFSs may be accessed from the **Help** menu. This Guide, as with the two other available guides, can be viewed on-line or printed locally. Each UETM should print a complete copy of this document to use as a handy reference. All CerTest program managers (test proctors) are responsible for adhering to the guidelines in this Management Guide.

1. General Information: CerTest is an interactive computer-based program designed to test, evaluate, and certify a student's knowledge of principles and procedures on various job-related subjects. The CerTest program contains numerous tests used to evaluate subject and task knowledge. Completion of some of these tests is **mandatory** for upgrade while others are not.

a. **ALL** tasks identified with a diamond (◆) in the Career Field Education and Training Plan (CFETP) have a Air Force Qualification Training Package (AFQTP) with a corresponding **Mandatory** certest. **Completion of these Certests are mandatory** to meet upgrade requirements. As of the publication of this guide there are approximately 90 mandatory CerTests relating to diamond tasks in the CE community.

b. CerTest was used extensively during the CE AFSC mergers of the early 90's. Approximately 300 Certests facilitated this merger. The days of the "CerTest Video Tape Libraries" are over. Many of the videotapes and corresponding CerTests related to the mergers are still relevant and serve as an excellent source for supplemental AFS training. Completion of these CerTests is **not** mandatory.

c. Career Development Course (CDC) volume review exercises (VREs) and end of course (EOC) evaluations tools (approximately 115 tests) have been added to CerTest. These Certests are used to evaluate the trainee's preparedness prior to taking the EOC. Units that have used

these evaluation tools have shown a dramatic decrease in CDC failures. We strongly encourage their use. Completion of these CerTests are **not** mandatory. NOTE: Some squadron operating procedures (OI) call for passing score on these evaluations before they are allowed to test.

d. All CerTests basically come under one of three categories, each with different levels of access authority. The access categories are as follows:

- 1) Unlocked CerTests. Approximately 12 tests in the program are identified as “*Pre tests*” and can be taken by anyone with a valid logon as many times as desired.
- 2) Locked CerTests. The majority of CerTests fall into this category. The Test cannot be taken until the CerTest Program Manager unlocks the test for an individual. The individual has a maximum of 4 attempts to pass the test.
- 3) Code-enabled CerTests. Cannot be opened by the UETM until an enable code is entered. These tests normally involve national certification issues. An example is the CFC CerTests. The codes are issued by the applicable authority. (see pages 6, 9)

2. CertTest Management: The CerTest program may be managed in different ways. It may be set up on one stand-alone computer system, or set up on a series of centrally located “stand-alone” computers (such as the Learning Resource Center [LRC]), or place on a drive/network system. Each method has its own advantages and disadvantages. Select the one that works best for you and your unit. If installed on more than one computer; however, computers must be located so that one of the three CerTest managers (with lock/unlock privileges) can control (proctor) all testing. It is recommended that these computers be located in a centralized Learning Resource Center (LRC). CerTest can be installed on computers that have other programs loaded on the hard drive.

a. To maintain integrity, and prevent test compromise, each UETM can assign up to **three** individuals as CerTest program managers with **lock/unlock test privileges**. The CerTest program will not allow more than three with these privileges. The CerTest program should be maintained like other official testing programs (See your service specific regulations for requirements).

3. Specific CerTest Manager (UETM) Responsibilities: The following are specific responsibilities for the CerTest Manager:

- a. Load CerTest. Assign and load two more CerTest Managers with lock/unlock rights to assist you.
- b. Update CerTest via web downloads from www.afcesa.af.mil
- c. Administer the CE Craftsman 7-Level Read-a-head (RAM) exam (new on CerTest 4.0). Be sure to print a copy of the results for the individual to take to the in-residence course with them.

- d. Maintain the integrity of your program (follow Management Guide guidance)
- e. Ensure applicable CerTests are completed for all diamond tasks identified in CFETP
- f. Administer and proctor test for trainees while testing (section 4 page 3)
- g. Perform required program maintenance (section 5 page 3)
- h. Add/Delete trainees due to PCS as necessary
- i. Back-up student records and site-specific tests at least weekly
- j. Collect and submit question challenges to the applicable DoD Administration Center as required. (section 10 page 5)

4. Test Proctor (any of the three managers with lock/unlock rights) Responsibilities: It is the CerTest proctor's responsibility to unlock and administer the applicable test, brief the trainee on the test challenge feature, and place the test results in the trainees records.

a. Not only is a test proctor responsible for monitoring students taking all **AF Qualification Training Package (AFQTP), CFCs/HCFs certification tests, CDC VRE and EOC evaluation tests**, he/she must also ensure these tests are not compromised in any way. This means making sure students do not have access to reference materials during the test, do not receive any assistance during the test. All "open book preparations" should be completed prior to taking the CerTest. Ensure the trainee is given a reasonable amount of time to complete a test.

WARNING: CerTest contains an "auto-shut-off" mode. After **5 minutes** of inactivity, CerTest will automatically score the test and exit. Whatever questions the student missed will be scored as an incorrect response.

b. A CFC/HCF proctor's responsibility is so critical that each proctor is required to complete the proctor authentication statement on each student's record test summary to verify that the proctor has complied with these and other guidelines contained in this Management Guide. For more information on CFC Tests and proctor requirements see section 14 of page 6.

5. Program Maintenance and Security: To enhance program maintenance and most importantly test security, several software changes were made. They are as follows:

a. CerTest 4.0 is shipped to each base in CD-ROM format only. CerTest can be ran by loading the program either directly onto your hard drive, or a local area network. After installation the CerTest CD-ROM must be secured. If a program compromise is suspected, contact the any of the three DoD POCs (see page 9).

b. Once you have loaded yourself as a CerTest manager using the master key "Sir Test" (123-45-6789 CE log in), log on as yourself and delete "Sir Test" from the manager list. Failing to delete Sir Test leaves your system subject to compromise.

c. Once CerTest is loaded it must be kept current. Check the AFCESA web site at www.afcesa.af.mil quarterly for Certest Updates.

d. As stated earlier, the program allows up to three managers to have lock/unlock tests rights. All other “managers” added (shop supervisors, supervisors, trainers) may be given rights to, build shop tests (Site Specific Tests), and view student records.

6. Equipment and Material Required in Support the CerTest Program: Hardware and software upgrade requirements for CerTest have remained at a conservative pace to maximize participation. **Commanders should be advised that CerTest is no longer an “optional” or supplemental OJT system. Mandatory upgrade requirements (e.g. AFQTP tests, 7-Level RAM test) have been tied to this platform. In the future CerTest will be the vehicle to meet more mandatory requirements.** Familiarization with CerTest will be critical for all trainees enrolled in CDCs.

- a. CerTest requires a minimum 486 PC (Pentium recommended) with at least 4 Megabytes (8 recommended) of Ram, MS-Windows® 3.1 (Windows '97 recommended) or higher, a VGA/SVGA color monitor, and printer. The following hard drive space must be available before installing CerTest:

Function	Required Memory
To run tests from CD	6 Megabytes
To load CerTest Operations (CE Craftsman)	58 Megabytes
To load CerTest for Fire Protection/Readiness	26 Megabytes
To load Operations and Fire Protection/Readiness	73 Megabytes

b. **Installation Strategy:** If you currently do not have computer systems with a CD-ROM drive, you can still load the program on each of your computer systems using an external CD-ROM drive. Check with your local computer support section to see if they have one you can use or make arrangements to purchase one or more. Also consider updating your computers

7. Learning Resource Centers (LRCs): The space and physical facilities selected for computer-based testing must be conducive to continuous surveillance by a test proctor during testing. Test proctors must ensure conditions are favorable for testing such as proper lighting, temperature, and freedom from distractions. A centralized testing facility is recommended for controlling the CerTest program. The test proctor must be able to monitor all computers at one time while official (CFC/HCFC) testing is in progress. When an LRC is used for CerTest it will be similar (with some exceptions) to requirements of a base test control facility (TCF).

8. Testing: The interactive computer portion of the program is used for testing only. CerTest contains various tests: Pretests, Posttests, Demo tests, Site tests, AFQTP tests, CDC VRE and EOC evaluations, etc. **Open book testing, “practice-test-taking”, or test reviewing is strictly prohibited.** Personnel will not compromise any test by discussing or copying tests.

a. Students should be prepared to sit through a test until the test is completed. Once testing has started, an entry must be made every five minutes; otherwise, the computer program will terminate the test and the student’s score for the entire test will be recorded.

b. Once the student completes a test, the test summary screen should be printed and placed into the student’s training record. If a student fails a test, a copy of the test summary showing which areas of instruction require additional study should be given to the student.

NOTE: If a copy of the test summary is needed at a later date, it can be recalled by entering into the Student Record and selecting the “*Detail*” option under the View menu or by double clicking on the Stat, Score, Date, or Attempts block for that test.

9. Test Failures Other Than CFC/HCFC: Test failure procedures should be addressed at the unit level. Other than the CFC/HCFC approved certification test, all test are used for evaluating subject and task knowledge.

10. Statistical Data Collection: Each time a CerTest test is taken, the program automatically collects statistical data that is used to validate the test. This information must be submitted to the DoD Administration Center when requested. Each time the CerTest program manager receives a “collect statistical data” message on the computer screen, or an e-mail request from AFCESA, please complete the following:

To Collect Statistical Data: Select the “*Statistical Data Utilities*” option found in the File menu of CerTest and follow the directions on the screen. **Note:** A separate disk must be used for each computer.

11. Challenging a Question: Anyone may challenge a CerTest test question. While taking a test, a student may find a question that he/she believes to be erroneous or invalid for some reason (i.e., typo, spelling mistake, missing graphic, ambiguous question, etc.). The student may challenge the question by clicking the hand icon on the toolbar, or by selecting “Challenge This Question” from the Help menu. This allows the student to type a short description of the error. You may view, print, or download some or all of these Question Challenges. These Challenge questions are to downloaded and sent to HQ AFCESA/CEOF quarterly.

12. Transferring Student Records Between Bases: When a person leaves (PCS) your unit, they should “hand carry” a disk copy and a hard copy of their CerTest status training to their gaining unit. The CerTest program manager copies a student’s record to a diskette 3 ½” diskette using the “*Copy to Diskette*” option found in the File menu of CerTest. Include any additional records (paper) that show completed training. The losing unit will maintain the student’s record in their CerTest database for at least 120 days before deleting it from the computer system. Suggestion: Add this procedure to your unit’s out/inprocessing checklist.

13. Program Errors: If a program error occurs, write down the information exactly as it appears on the computer screen, then contact the CerTest Program Manager for Operations, SMSgt Jim Lucas, HQ AFCESA, DSN: 523-6380; or the Technical Assistant Branch at DSN 736-5805.

14. CFC/HCFC Certification and Testing: The Environmental Protection Agency (EPA) mandated effective November 14, 1994, persons that maintain, service, or repair refrigeration and air conditioning systems containing chlorofluorocarbons (CFC) and/or hydrochlorofluorocarbons (HCFC) must be certified by an approved certification program. In February 1994, EPA approved the 366TRS/TTM, Sheppard AFB TX (Air Force Civil Engineer Technical Training School) to be the DOD CFC Certifying Agent.

a. There are four types of certification:

- Type I (household appliances)
- Type II (high pressure systems)
- Type III (low pressure systems)
- Universal Technician (encompasses all types)**

****Note:** All Air Force Civil Engineers requiring certification (primarily HVAC/R personnel) will be certified to the Universal Technician Level.

b. If you, as the unit’s CerTest Program Manager, wish to load the chlorofluorocarbons (CFC) and/or hydrochlorofluorocarbons (HCFC) Certification tests and DO NOT already have them on your system(s), complete the installation, then enter CerTest and select Enable Secure Tests available under the File pull down menu. You will have to call the appropriate point of contact displayed on the Enable Secure Test Groups screen to obtain the appropriate Enable Code.

c. All **CerTest CFC/HCFC test proctors must be designated in writing.** This appointment letter must include a statement that states they have read and understand all CerTest program requirements listed in this CerTest Procedural Guide. A copy of this letter must be forwarded to the DoD Administration Center and an info copy must be forwarded to your command or service component representative. The letter should be formatted and contain the information included in this sample:

**DEPARTMENT OF THE AIR FORCE
ANY CE SQUADRON, (MAJCOM)
ANYBASE AIR FORCE BASE, ANYWHERE**

MEMORANDUM FOR 366 TRS/TTM (CFC/HCFC))
727 Missile Road
Sheppard AFB, TX 76311-2254
ATTN: Mr. Ron Lawson

FROM: XXX CES/CCQT
1111 Anystreet, Suite 10
Anybase, Anywhere 11111-0001

SUBJECT: CERTEST Proctors

1. As requested, this letter identifies the CFC/HCFC Proctor(s) for the (your unit)CES at (your base) AFB, (your State).
2. All proctors, by signing this letter, state that they have read and fully understand all CerTest program requirements listed in the CerTest Procedural Guide. Failure to follow the procedures listed for CFC/HCFC testing is in direct violation of Environmental Protection Agency Guidelines and is punishable by federal law.

NAME	RANK	SSAN	ADDRESS	DSN
<hr/>				
Terry B. Smith	MSgt	123-45-6789	1111 Balboa Dr TAFB, FL	523-4444

SIGNATURE

Kerri C. Jones	SSgt	222-22-2222	1111 Balboa Dr TAFB, FL	523-4444
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SIGNATURE

CE COMMANDERS SIGNATURE

d. **Test Administration.** The CFC Certification program has a **Universal Pretest** and **Posttests** for each level. At least one CerTest program manager will proctor personnel testing. The examinee will need to bring their own Pressure Temperature Chart and calculator while testing. No other study materials will be allowed in the test room/area.

e. **BEFORE ADMINISTERING A TEST:** Verify the identity of individuals taking CFC certification tests by examining photo identification. Acceptable identification includes, but are not limited to drivers' licenses, government identification cards, or passports.

f. Examinees should be prepared to sit through the test until complete. Only the testing examinee will be allowed at a computer while the test is in progress. Personnel are **not** allowed to take "practice tests" or review any tests.

NOTE: Once testing has started, an entry must be made every five minutes; otherwise, the computer program will terminate the test and a "failed" score will be recorded.

g. **Pretest:** It's recommended that personnel take the pretest before taking any certification tests. The Pretest is at the back of the CFC StudyGuide/Workbook.

h. **Posttest:** All examinees must take the Core Test before taking any other tests. **Only one CFC Test should be unlocked at a time.**

i. **Test Failures:** If an examinee should fail a test, print them a copy of the "test summary" (test summary identifies areas the trainee may require additional training). All test failures should result in the trainee receiving supervised, remedial training. After remedial training has been completed, retest the examinee. If the examinee again fails the test, the commander should be notified and appropriate action taken.

j. **Record Keeping:** Once an examinee passes their required level of certification (AF Civil Engineers must be Universal certified), print two copies of the "student record". Test proctors must provide the following information on both copies: Name, SSAN, signature, and verification statement that the Certification level is correct. Put one copy of the "student record" in the examinees training/personnel folder. Send the other copy, along with a 3 ½" disk containing downloaded statistical data and the electronic student record, will be sent to the DoD CFC/HCFC Administration Center.

k. Use the File pull down menu and "*Copy to Diskette*", and "*Statistical Data Utilities*" to download the student record and statistical data. Follow the directions on the screen. Send the 3 ½" disk, the printed student record, and a return 3-line address:

123 CES/CE
56 FLIGHT AVE.
ANYWHERE AFB TX 74201

l. If a copy of the test summary is needed at a later date, it can be recalled by entering into the Student Record section and selection “DETAIL”. The computer program will retain this information for 90 days from the test date before its automatically deleted.

16. CerTest Points of Contact: Base-level CerTest program managers should contact the DoD CerTest program manager if assistance is needed.

a. The DoD Administration Center for the CFC/HCFC Program is:

Mr. Ron Lawson, 366 TRS/ TTM (CFC/HCFC)
727 Missile Rd. Sheppard AFB, TX 76311-2254;
DSN: 736-5793/5809 Commercial (940) 676-5793/5809;
DSN FAX: 736-2768 Commercial FAX: (940) 676-2768;
e-mail: ron.lawson@sheppard.af.mil

b. The DoD/Air Force Fire OPR for CerTest is:

CMSgt Jim Podolske, HQ AFCESA/CEXF
139 Barnes Drive, Suite 1, Tyndall AFB, FL 32403
DSN: 523-6321 Commercial (850) 283-6321;
DSN FAX: 523-6390 Commercial (850) 283-6390;
e-mail: jim.podolske@tyndall.af.mil,
Web Site – www.afcesa.af.mil

c. The DoD/Air Force Operational OPR for CerTest is:

SMSgt Jim Lucas, HQ AFCESA/CEOF
139 Barnes Drive, Suite 1, Tyndall AFB, FL 32403
DSN: 523-6380 Commercial (850) 283-6421;
DSN FAX: 523-6488 Commercial (850) 283-6488;
e-mail: jim.lucas@tyndall.af.mil,
Web Site – www.afcesa.af.mil

17. Supplemental Training Reference Material: The lists of reference materials and tests numbers that facilitated the AFSC mergers of the early ‘90s have been included in the CerTest

program. The list(s) in the last section of this guide identifies the videotapes, training manuals, and courses that were used to develop these tests.

ALL OF THE FOLLOWING PROVIDE AN EXCELLENT SOURCE FOR SUPPLEMENTAL TRAINING ARE NOT MANDATORY.

18. Student/Instructor Guides. Student and Instructor study guides can be purchased for videotapes obtained from the Army Visual Information Center and Williams Learning Network. For the latest cost of the guides, contact Williams Learning Network:

Special Note: NUS was purchased by Williams Learning Network. Any correspondence dealing with NUS should now be directed to Williams Learning Network.

Williams Learning Network
2848 Paces Ferry Road, Suite 215
Atlanta, GA. 30339-3769
1-800-969-8754
POC: Mr. Jim Earle

ARMY VISUAL INFORMATION CENTER (AVIC)

Submitted orders on a Military Interdepartmental Purchase Request, DD *Form* 448 (\$6.00 per tape)
POC: Ms Debbie Whitaker

US ARMY Visual Information Center Joint Visual information Activity ATTN: ASQ-V-JVIA-T-AS/Budget Officer 11 Midway Rd, Warehouse 3 Bay 3 Tobyhanna Army Depot, Pennsylvania 18466-5102 DSN 795-7438	
TITLE	P. I. N.
Powers, Root, and Mathematics	802728DN
Algebra and Formulas	802729DN
Algebra and Graphs	802730DN
Fundamentals of Math	802731DN
Using Formulas	802732DN
Graphs, Charts, and Tables	802733DN
Power Generation	802734DN
Fundamentals of Electricity 1	802751DN
Fundamentals of Electricity 2	802752DN
Batteries, Generators, and Motors	802753ND
Transformer Control Mechanisms	802754DN
Power Generation Principles	802787DN
Power Generation AC Power	80278BDN
Generator Operation	802790DN
Reading Electrical Diagrams	802791DN
Three Phase Power	802792DN
Unit Transformers, SwYds, and Substs	802793DN
Station Service Systems	802794DN
Fundamentals of Plant Protection	802795DN
Electrical Protection	802796DN
Air Compressors I	802803DN
Air Compressors 2	802804DN
Basic Bearings	802805DN
Basic Lubrication	802806DN
Roller Contact Bearings 1	802807DN

Roller Contact Bearings 2	80280BDN
Sliding Surface Bearings 1	802809DN
Sliding Surface Bearings 2	802810DN
Cutting Tools	802817DN
Gaskets, Packing, Mech Seals	802818DN
Hand Tools 1	802819DN
Hand Tools 2	802820DN
Measurement Tools I	802821DN
Measurement Tools 2	802822DN
Power Tools	802823DN
Resurfacing Techniques	802824DN
Gauge Glass Maintenance	802825DN
Heat Exchangers I	802826DN
Heat Exchangers 2	802827DN
Print Reading and Use	802829DN
Pipe and Pipe Fitting	802830DN
Safety Valves 1	802831DN
Safety Valves 2	802832DN
Valve Maintenance 1	802833DN
Valve Maintenance 2	802634DN
Piping Auxiliaries	802835DN
Steam Trap	802836DN
Thermal Installation	802837DN
Fire Safety	80283BDN
Centrifugal Pumps 1	802842DN
Centrifugal Pumps 2	802843DN
Hazardous Substances	802839DN
Pressure & Pressure Measurement	802850DN
Pressure Gauges & Calibration 1	802851DN
Pressure Gauges & Calibration 2	802852DN
Liquid Level Measurements 1	802854DN
Liquid Level Measurements 2	802855DN
Fluid Flow Measurements 1	802856DN
Fluid Flow Measurements 2	802857DN
Temperature & Temperature Measurements 1	802858DN
Temperature & Temperature Measurements 2	802859DN
Actuators	802860DN

Recorder	802861DN
Basic Process Control Unit 1	802862DN
Basic Process Control Unit 2	802863DN
Basic Control Loops	802864DN
Troubleshooting and Repair	802865DN
Basic Electronics Unit 1	802866DN
Basic Electronics Unit 2	802867DN
Power Supplies	80286BDN
Transistor Principles	802869DN
Transistor Amplifiers	802870DN
Transistor Oscillators	802871DN
Specialized Electronic Devices	802872DN
Operational Amplifiers Unit 1	802873DN
Operational Amplifiers Unit 2	802874DN
Using Electronic Test Equip 1	802876DN
Using Electronic Test Equip 2	802877DN
Using Electronic Test Equip 3	80267BDN
Cable and Wire Terminations	802879DN
Circuit Board Repair	80288ODN
Electronic Control Systems I	802881DN
Electronic Control Systems 2	802882DN
Electronic Control Systems 3	802883DN
Electronic Control Diagrams	802884DN
Basic Pneumatic Systems/diagrams	802885DN
DC Fundamentals Review	802897DN
Electromagnetic Introduction Review	802899DN
Safety in Electric Maintenance	802900DN
Using Electrical Test Equipment	802901DN
Reading Electrical Diagrams 1	802902DN
Reading Electrical Diagrams 2	802903DN
Troubleshooting & Emergency Repair of DC Systems & Equipment	802904DN
Troubleshooting & Emergency Repair of AC Systems & Equipment	802905DN
AC Generators Maintenance	802906DN
DC Generators Maintenance	802907DN
DC Motor Maintenance	802908DN
DC Motor Controller Maintenance 1	802909DN
DC Motor Controller Maintenance 2	802910DN

Single Phase AC Motor Maintenance	802911DN
Three Phase AC Motor Maintenance	802912DN
AC Motor Controller Maintenance 1	802913DN
AC Motor Controller Maintenance 2	802914DN
Motor Branch Circuit Protection Transformer Maintenance	802916DN
Maintenance of Low Voltage Circuit Breakers and Switchgear	802917DN
Maintenance of High Voltage Circuit	802918DN
Breakers and Switchgear	802919DN
Storage Batteries and Chargers	802920DN
Cables and Conductors, Splices and Terminations 1	802921DN
Cables and Conductors, Splices and Terminations 2	802922DN
Conduit Installation	802923DN

HOMETIME VIDEOTAPES

The following videotapes can be purchased from Hometime Video. For cost information, call Ms. Julie Tuttle:

Special Note: Hometime has updated some of its videos. So some of the Hometime videos do not match the test questions that were developed for the previous video by the same title.

HOMETIME 4275 NOREX DRIVE CHASKA, MN 55318 1-800-469-9955		
Basic Landscaping		Home Security
Cabinets		Lawn Care
Ceilings		Lighting
Ceramic Tile		Patios & Walkways
Common Home Repairs		Plumbing
Contracting a Home Vol 1		Preventive Home Maintenance
Contracting a Home Vol 2		Roofing
Decks		Siding
Drywall		3-Season Porch
Electrical		Trees & Shrubs
Exterior Painting		Underground Sprinklers
Fences & Gates		Vinyl Flooring
Finish Carpentry		Weather & Installation

Finishing a Basement Framing Hand & Power Tools Home Evaluation	Windows & Doors Wood Flooring
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The following videotapes can be purchased from TPC Training Systems. For cost information, contact Ms. Wendy Wilimann

<p style="text-align: center;">TPC Training Systems 750 Lake Cook Rd Suite 250 Buffalo Grove, IL. 60089 1-800-837-8872</p>
--

Title	Ordering Code
Basic Masonry (5 tapes) Spreading Mortar The Pyramid Building a Corner Wall Construction 1 Wall Construction 2	BM40
Sheet Metal Work (7 tapes) Introduction and Overview Straight Line Pattern Development Par & Rad Line Pattern Development Cutting Methods Drill, Form, and Bending 1 Drill, Form, and Bending 2 Assembly and Fastening	B507 B507
Welding Explained (5 tapes) Basic Nomenclature Prepping the Unit for Welding Light & Adjust Welding Flame Basic Application Varying Applications	B901
Oxyacetylene Cutting (2 tapes)	B903

Setting up the Equipment Specialized Oxyacet Cutting	
Electric Arc Welding (5 tapes) Introduction to Arc Welding Protective Devices and Clothing Striking the Arc Running the Bead Weaving the Bead	B904A

Williams Learning Network / NUS Training Corp.

Special Note: NUS was purchased by Williams Learning Network. Any correspondence dealing with NUS should now be directed to Williams Learning Network.

Williams Learning Network 2848 Paces Ferry Road, Suite 215 Atlanta, GA. 30339-3769 1-800-969-8754 POC: Mr Jim Earle

High Voltage AC Power 1 High Voltage AC Power 2 Safety in Transmission & Distribution Maintenance Care & Testing of Tools & Equipment Bucket Trucks 1 Bucket Trucks 2 Series Street Lighting Systems Multiple Street Lighting Systems Safety in Overhead Line Maintenance Climbing Wooden Poles Working on Distribution Poles Troubleshooting Overhead Lines Overhead Distribution Systems Pole Top Transformer Replacement Pole Top Equipment & Replacement 1 Pole Top Equipment & Replacement 2 Distribution Line Repair (Gloves) Distribution Line Repair (Hot Sticks)
Distribution Line Safety

Transformer Connections I
Transformer Connections 2
Transformer Troubleshooting
Safety in Underground Line Maintenance
Pad Mounted Transfer & Switchgear
Safety in Substation & Switchgear
Circuit Breakers 1
Circuit Breakers 2
Voltage Regulators
Relays 1
Relays 2
Cable Fault Location 1
Cable Fault Location 2
Transformers 1
Transformers 2

*If one of the above tapes should become defective (normal wear and tear), NUS has agreed to replace it for a nominal fee.

AIR FORCE AUDIOVISUAL

The following tapes can be ordered through Air Force audiovisual services with no cost to the base:

Refrigeration Fundamentals	609107
Vapor Compression Cycle Components	609108
Condenser and Cooling Towers	609109
Evaporators	609110
Chillers	609111
Heat Pumps	609113
Refrigeration Piping	609114
Refrigeration Controls	609115
Capacity Testing	609116
Low Temperature Refrigeration	609117
Special Applications	609118
Basic Water Chemistry	
Chemistry Concepts	802759DF
Water Chemistry Fundamentals	802760DF
Elementary Water Treatments	802761DF
Water Chemistry Applications	802762DF

Water Treatment Equipment	
Boiler Water Treatment	802771DF
Raw Water Treatment	802772DE
Ion Exchange	802773DF
Cooling Water Treatment	802774DF
Pavement Maintenance, Repair and Inspection Seminar Videotape Progm 610276DF Introduction to Pavement Fundamentals (Included in above set) Rigid Distresses (Included in above set) Pavement Maintenance and Repair 1 (Included in above set) Pavement Maintenance and Repair 2 (Included in above set) Pavement Maintenance and Repair 3 (Included in above set) Flexible Pavement Distresses 1 (Included in above set) Flexible Pavement Distresses 2 (Included in above set) Flexible Pavement Distresses 3 (Included in above set) Soil Fundamentals and Stabilization 1 (Included in above set) Soil Fundamentals and Stabilization 2 (Included in above set) Soil Fundamentals and Stabilization 3 (Included in above set) New Technology (Included in above set) Pavement Management System 1 (Included in above set) Pavement Management System 2 (Included in above set) Pavement Management System 3 (Included in above set) Pavement Management System 4 (Included in above set)	

20. Training Areas:

All Training Areas
AFQTP (Mandatory)
Read-A-Head Material (RAM)
Operational AFSs Certifications
Contingency
Hazardous Materials
Infectious Disease Control
Volume Review Exercises
Certification Review Course Exercises
End of Course Review Exercises
Driver/Operator
Firefighter I Series
Firefighter II Series
EPA CFC Tests
Demo Tests
Specialty Suggested
Site Specific

All Specialties

3E0X1 Electrical Systems
3E0X2 Electrical Power Production
3E1X1 Heating, Ventilation, AC & Refrigeration (HVAC/R)
3E2X1 Pavements & Construction Equipment Operators
3E3X1 Structural
3E4X1 Utilities Systems
3E4X2 Liquid Fuels Maintenance
3E4X3 Environmental Controls
3E5X1 Engineering
3E6X1 Operations Management
3E7X1 Fire Protection
3E8X1 EOD
3E9X1 Readiness
Demonstrations

Sources for Videotapes

AFAV	- Air Force Audiovisual	(Check Local Listing)
AVIC	- Army Visual Information Center	DSN: 795 7438
TPC	- TPC Training Corporation	1 800 837 8872
WLN	- Williams Learning Network	1 800 969 8754
HT	- HomeTime	1 800 469 9955

(3E0X1) ELECTRICAL SYSTEMS

<u>Test No</u>	<u>Tape Title</u>	<u>Source</u>
CE GENERAL		
819	Hand Tools 1	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
LOW VOLTAGE		
751	Fundamentals of Electricity I	AVIC
752	Fundamentals of Electricity 2	AVIC
897	DC Fundamentals Review	AVIC
899	Electromagnetic Induction Review	AVIC
900	Safety in Electrical Maintenance	AVIC
901	Using Electrical Test Equipment	AVIC
902	Reading Electrical Diagrams 1	AVIC
903	Reading Electrical Diagrams 2	AVIC
904	Troubleshooting & Emergency Repair of DC Systems & Equipment	AVIC
905	Troubleshooting & Emergency Repair of AC Systems & Equipment	AVIC
906	AC Generators Maintenance	AVIC
907	DC Generators Maintenance	AVIC
908	DC Motor Maintenance	AVIC
909	DC Motor Controller Maintenance 1	AVIC
910	DC Motor Controller Maintenance 2	AVIC
911	Single Phase AC Motor Maintenance	AVIC
912	Three Phase AC Motor Maintenance	AVIC
913	AC Motor Controller Maintenance 1	AVIC
914	AC Motor Controller Maintenance 2	AVIC
916	Motor Branch Circuit Protection	AVIC
917	Transformer Maintenance	AVIC
918	Maintenance of Low Voltage Circuit Breakers and Switchgear	AVIC

<u>Test No</u>	<u>Tape Title</u>	<u>Source</u>
919	Maintenance of High Voltage Circuit Breakers and Switchgear	AVIC
920	Storage Batteries and Chargers	AVIC
921	Cables and Conductors, Splices and Terminations 1	AVIC
922	Cables and Conductors, Splices and Terminations 2	AVIC
923	Conduit Installation	AVIC
HIGH VOLTAGE DISTRIBUTION		
130	Overhead Distribution Systems	WLN
131	Distribution Line Safety	WLN
132	Transformers 1	WLN
133	Transformers 2	WLN
134	Transformer Connections I	WLN
135	Transformer Connections 2	WLN
136	Transformer Troubleshooting	WLN
137	Pole Top Transformer Replacement	WLN
138	Climbing Wooden Poles	WLN
139	Care/Testing of Tools & Equipment	WLN
140	Working on Distribution Poles	WLN
141	Safety in Overhead Line Maintenance	WLN
142	Pole Top Equipment & Replacement 1	WLN
143	Pole Top Equipment & Replacement 2	WLN
144	Troubleshooting Overhead Lines	WLN
145	Safety in Substation & Switchgear	WLN
146	Substation & Switchyard Maintenance	WLN
147	Safety in Transmission and Distribution Maintenance	WLN
148	Distrib Line Repair (Gloves)	WLN
149	Distrib Line Repair (Hot Sticks)	WLN
150	Voltage Regulators	WLN
151	Circuit Breakers 1	WLN
152	Circuit Breakers 2	WLN
153	Relays 1	WLN
154	Relays 2	WLN
155	Cable Fault Location 1	WLN
156	Cable Fault Location 2	WLN
157	Pad Mounted Transfer & Switchgear	WLN

158	Safety-Underground Line Maintenance	WLN
159	Bucket Trucks I	WLN
160	Bucket Trucks 2	WLN
161	High Voltage AC Power I	WLN
162	High Voltage AC Power 2	WLN
163	Series Street Lighting Systems	WLN
164	Multiple Street Lighting Systems	WLN
ELECTRONICS		
866	Basic Electronics Unit 1	AVIC
867	Basic Electronics Unit 2	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
951	Common Home Repairs	HT
952	Contracting a Home 1	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT
ELECTRONICS		
868	Power Supplies	AVIC
869	Transistor Principles	AVIC
870	Transistor Amplifiers	AVIC

871	Transistor Oscillators	AVIC
872	Specialized Electronic Devices	AVIC
873	Operational Amplifiers Unit 1	AVIC
874	Operational Amplifiers Unit 2	AVIC
876	Using Electronic Test Equip 1	AVIC
877	Using Electronic Test Equip 2	AVIC
878	Using Electronic Test Equip 3	AVIC
879	Cable and Wire Terminations	AVIC
880	Circuit Board Repair	AVIC

(3EX02) ELECTRICAL POWER PRODUCTION

Test No Tape Title Source

CE GENERAL		
819	Hand Tools I	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
839	Hazardous Substances	AVIC
185	Mobile Aircraft Arresting System	AFAV
734	Power Generation	AVIC
753	Batteries, Generators, and Motors	AVIC
754	Transformer Control Mechanisms	AVIC
787	Power Generation Principles	AVIC
788	Power Generation AC Power	AVIC
790	Generator Operations	AVIC
791	Reading Electrical Diagrams	AVIC
792	Three Phase Power	AVIC
793	Unit Transform, SwYds, and Substs	AVIC
794	Station Service Systems	AVIC
795	Fundamentals of Plant Protection	AVIC
796	Electrical Protection	AVIC
805	Basic Bearings	AVIC
806	Basic Lubrication	AVIC

LOW VOLTAGE		
751	Fundamentals of Electricity 1	AVIC
752	Fundamentals of Electricity 2	AVIC
897	DC Fundamentals Review	AVIC
899	Electromagnetic Induction Review	AVIC
900	Safety in Electrical Maintenance	AVIC
901	Using Electrical Test Equipment	AVIC
902	Reading Electrical Diagrams 1	AVIC
903	Reading Electrical Diagrams 2	AVIC
904	Troubleshooting & Emergency Repair of DC Systems & Equip	AVIC
905	Troubleshooting & Emergency Repair of AC Systems & Equip	AVIC
906	AC Generators Maintenance	AVIC
907	DC Generators Maintenance	AVIC
908	DC Motor Maintenance	AVIC
909	DC Motor Controller Maintenance I	AVIC
910	DC Motor Controller Maintenance 2	AVIC
911	Single Phase AC Motor Maintenance	AVIC
912	Three Phase AC Motor Maintenance	AVIC
913	AC Motor Controller Maintenance 1	AVIC
914	AC Motor Controller Maintenance 2	AVIC
916	Motor Branch Circuit Protection	AVIC
918	Maintenance of Low Voltage Circuit Breakers and Switchgear	AVIC
920	Storage Batteries and Chargers	AVIC
921	Cable/Condtr/Splices/Termination 1	AVIC
922	Cable/Condtr/Splices/Termination 2	AVIC
ELECTRONICS		
866	Basic Electronics Unit 1	AVIC
867	Basic Electronics Unit 2	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV

214	Base Denial	AFA
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
951	Common Home Repairs	HT*
952	Contracting a Home I	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT
ELECTRONICS		
868	Power Supplies	AVIC
869	Transistor Principles	AVIC
870	Transistor Amplifiers	AVIC
871	Transistor Oscillators	AVIC
872	Specialized Electronic Devices	AVIC
873	Operational Amplifiers Unit 1	AVIC
874	Operational Amplifiers Unit 2	AVIC
876	Using Electronic Test Equip 1	AVIC
877	Using Electronic Test Equip 2	AVIC
878	Using Electronic Test Equip 3	AVIC
879	Cable and Wire Terminations	AVIC
880	Circuit Board Repair	AVIC

**(3E1X1) HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION
(HVAC/R)**

Test No Tape Title Source

CE GENERAL		
819	Hand Tools 1	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
839	Hazardous Substances	AVIC
LOW VOLTAGE		
751	Fundamentals of Electricity I	AVIC
752	Fundamentals of Electricity 2	AVIC
900	Safety in Electrical Maintenance	AVIC
901	Using Electrical Test Equipment	AVIC
902	Reading Electrical Diagrams 1	AVIC
903	Reading Electrical Diagrams 2	AVIC
911	Single Phase AC Motor Maintenance	AVIC
912	Three Phase AC Motor Maintenance	AVIC
ELECTRONICS		
866	Basic Electronics Unit 1	AVIC
867	Basic Electronics Unit 2	AVIC
HEATING		
805	Basic Bearings	AVIC
806	Basic Lubrication	AVIC
807	Roller Contact Bearings 1	AVIC
808	Roller Contact Bearings 2	AVIC
809	Sliding Surface Bearings 1	AVIC
810	Sliding Surface Bearings 2	AVIC
817	Cutting Tools	AVIC
818	Gaskets, Packing, Mech Seals	AVIC
824	Resurfacing Techniques	AVIC
825	Gauge Glass Maintenance	AVIC
826	Heat Exchangers 1	AVIC
827	Heat Exchangers 2	AVIC

829	Print Reading and Use	AVIC
830	Pipe and Pipe Fitting	AVIC
831	Safety Valves 1	AVIC
832	Safety Valves 2	AVIC
833	Valve Maintenance I	AVIC
834	Valve Maintenance 2	AVIC
835	Piping Auxiliaries	AVIC
836	Steam Traps	AVIC
837	Thermal Installation	AVIC
842	Centrifugal Pumps 1	AVIC
843	Centrifugal Pumps 2	AVIC
REFRIGERATION		
107	Refrigeration Fundamentals	AFAV
108	Vapor Compression Cycle Components	AFAV
109	Condenser and Cooling Towers	AFAV
110	Evaporators	AFAV
111	Chillers	AFAV
113	Heat Pumps	AFAV
114	Refrigeration Piping	AFAV
115	Refrigeration Controls	AFAV
116	Capacity Testing	AFAV
117	Low Temperature Refrigeration	AFAV
118	Special Applications	AFAV
803	Air Compressors 1	AVIC
804	Air Compressors 2	AVIC
CONTROLS		
850	Pressure & Pressure Measurement	AVIC
851	Pressure Gauges & Calibration 1	AVIC
852	Pressure Gauges & Calibration 2	AVIC
854	Liquid Level Measurements 1	AVIC
855	Liquid Level Measurements 2	AVIC
856	Fluid Flow Measurements 1	AVIC
857	Fluid Flow Measurements 2	AVIC
858	Temperature & Temp Measurements 1	AVIC
859	Temperature & Temp Measurements 2	AVIC
860	Actuators	AVIC
861	Recorders	AVIC

862	Basic Process Control Unit 1	AVIC
863	Basic Process Control Unit 2	AVIC
864	Basic Control Loops	AVIC
865	Troubleshooting and Repair	AVIC
881	Electronic Control Systems 1	AVIC
882	Electronic Control Systems 2	AVIC
883	Electronic Control Systems 3	AVIC
884	Electronic Control Diagrams	AVIC
885	Basic Pneumatic Systems/Diagrams	AVIC

WATER TREATMENT		
BASIC WATER & CHEMISTRY		
759	Chemistry Concepts	AVIC
760	Water Chemistry Fundamentals	AVIC
761	Elementary Water Treatments	AVIC
762	Water Chemistry Applications	AVIC
WATER TREATMENT EQUIPMENT		
771	Boiler Water Treatment	AVIC
772	Raw Water Treatment	AVIC
773	Ion Exchange	AVIC
774	Cooling Water Treatment	AVIC
OXY NON-FUSION		
630	Basic Nomenclature	TPC
631	Prepping the Unit for Welding	TPC
632	Light & Adjust Welding Flame	TPC
633	Basic Application	TPC
634	Varying Applications	TPC
OXYACET CUTTING		
635	Setting up the Equipment	TPC
636	Specialized Oxyacet Cutting	TPC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV

214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
951	Common Home Repairs	HT
952	Contracting a Home 1	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT
LOW VOLTAGE		
913	AC Motor Controller Maintenance 1	AVIC
ELECTRONICS		
868	Power Supplies	AVIC
869	Transistor Principles	AVIC
870	Transistor Amplifiers	AVIC
871	Transistor Oscillators	AVIC
872	Specialized Electronic Devices	AVIC
873	Operational Amplifiers unit 1	AVIC
874	Operational Amplifiers unit 2	AVIC
876	Using Electronic Test Equip 1	AVIC
877	Using Electronic Test Equip 2	AVIC
878	Using Electronic Test Equip 3	AVIC
879	Cable and Wire Terminations	AVIC
880	Circuit Board Repair	AVIC
BASIC ARC WELDING		
625	Introduction to Arc Welding	TPC
626	Protective Devices and Clothing	TPC
627	Striking the Arc	TPC
628	Running the Bead	TPC
629	Weaving the Bead	TPC

(3E2X1) PAVEMENTS & CONSTRUCTION EQUIPMENT OPERATIONS

<u>Test No</u>	<u>Tape Title</u>	<u>Source</u>
CE GENERAL		
819	HandTools 1	AVIC
820	HandTools 2	AVIC
838	FireSafety	AVIC
839	Hazardous Substances	AVIC
PAVEMENT/EQUIPMENT		
415	Patios & Walkways	HT
451	Basic Landscaping	HT
452	Fences & Gates	HT
453	Lawn Care	HT
454	Trees & Shrubs	HT
PAVEMENT MAINT, REPAIR, & INSPECTION		
455	Introduction to Pavement Fundamentals	AFAV
456	Rigid Distresses	AFAV
457	Pavement Maintenance and Repair 1	AFAV
458	Pavement Maintenance and Repair 2	AFAV
459	Pavement Maintenance and Repair 3	AFAV
460	Flexible Pavement Distresses 1	AFAV
461	Flexible Pavement Distresses 2	AFAV
462	Flexible Pavement Distresses 3	AFAV
463	Soil Fundamentals and Stabilization 1	AFAV
464	Soil Fundamentals and Stabilization 2	AFAV
465	Soil Fundamentals and Stabilization 3	AFAV
466	New Technology	AFAV
467	Pavement Management System 1	AFAV
468	Pavement Management System 2	AFAV
469	Pavement Management System 3	AFAV
470	Pavement Management System 4	AFAV
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV

205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
823	Power Tools	AVIC
951	Common Home Repairs	HT
952	Contracting a Home 1	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT
BASIC ARC WELDING		
625	Introduction to Arc Welding	TPC
626	Protective Devices and Clothing	TPC
627	Striking the Arc	TPC
628	Running the Bead	TPC
629	Weaving the Bead	TPC
OXY NON-FUSION		
630	Basic Nomenclature	TPC
631	Prepping the Unit for Welding	TPC
632	Light & Adjust Welding Flame	TPC
633	Basic Application	TPC
634	Varying Applications	TPC
OXYACET CUTTING		
635	Setting up the Equipment	TPC
636	Specialized oxyacet Cutting	TPC

(3E3X1) STRUCTURES

<u>Test No</u>	<u>Tape Title</u>	<u>Source</u>
CE GENERAL		
819	Hand Tools 1	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
839	Hazardous Substances	AVIC
CARPENTRY		
951	Common Home Repairs	AVIC
401	Cabinets	HT
402	Ceilings	HT
403	Ceramic Tile	HT
404	Decks	HT
405	Drywall	HT
406	Electrical	HT
407	Exterior Painting	HT
408	Finish Carpentry	HT
409	Finishing A Basement	HT
410	Framing	HT
411	Hand & Power Tools	HT
412	Home Security	HT
413	Lighting	HT
415	Patios & Walkways	HT
416	Roofing	HT
417	Siding	HT
418	3-Season Porch	HT
419	Vinyl Flooring	HT
420	Weather & Installation	HT
421	Windows & Doors	HT
422	Wood Flooring	HT
BASIC MASONRY		
425	Spreading Mortar	TPC
426	The Pyramid	TPC
427	Building a Corner	TPC

428	Wall Construction 1	TPC
429	Wall Construction 2	TPC
SHEET METAL		
600	Introduction and Overview	TPC
601	Straight Line Pattern Development	TPC
602	Par & Rad Line Pattern Development	TPC
603	Cutting Methods	TPC
604	Drill, Form, and Bending 1	TPC
605	Drill, Form, and Bending 2	TPC
606	Assembly and Fastening	TPC
BASIC ARC WELDING		
625	Introduction to Arc Welding	TPC
626	Protective Devices and Clothing	TPC
627	Striking the Arc	TPC
628	Running the Bead	TPC
629	Weaving the Bead	TPC
OXY NON-FUSION		
630	Basic Nomenclature	TPC
631	Prepping the Unit for Welding	TPC
632	Light & Adjust Welding Flame	TPC
633	Basic Application	TPC
634	Varying Applications	TPC
OXYACET CUTTING		
635	Setting up the Equipment	TPC
636	Specialized Oxyacet Cutting	TPC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
728	Power, Roots, and Mathematics	AVIC

833	Valve Maintenance 1	AVIC
834	Valve Maintenance 2	AVIC
835	Piping Auxiliaries	AVIC
837	Thermal Installation	AVIC
842	Centrifugal Pumps 1	AVIC
843	Centrifugal Pumps 2	AVIC
BASIC WATER CHEMISTRY		
759	Chemistry Concepts	AVIC
760	Water Chemistry Fundamentals	AVIC
761	Elementary Water Treatments	AVIC
762	Water Chemistry Applications	AVIC
773	Ion Exchange	AVIC
LOW VOLTAGE ELECTRIC		
751	Fundamentals of Electricity 1	AVIC
752	Fundamentals of Electricity 2	AVIC
900	Safety in Electrical Maintenance	AVIC
901	Using Electrical Test Equipment	AVIC
902	Reading Electrical Diagrams 1	AVIC
911	Single Phase AC Motor Maintenance	AVIC
912	Three Phase AC Motor Maintenance	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	FAV
204	Desert Survival	FAV
205	Cold Weather Survival	FAV
206	Explosive Ordnance Reconnaissance	FAV
210	Resource Dispersal	FAV
212	RRR Philosophy	FAV
214	Base Denial	FAV
257	Spall Repair	FAV
264	Command and Control	FAV
267	Auxiliary Firefighting	FAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC

839	Hazardous Substances	AVIC
GENERAL MAINTENANCE		
805	Basic Bearings	AVIC
806	Basic Lubrication	AVIC
807	Roller Contact Bearings 1	AVIC
808	Roller Contact Bearings 2	AVIC
809	Sliding Surface Bearings 1	AVIC
810	Sliding Surface Bearings 2	AVIC
817	Cutting Tools	AVIC
818	Gaskets, Packing, Mech Seals	AVIC
824	Resurfacing Techniques	AVIC
829	Print Reading and Use	AVIC
830	Pipe and Pipe Fitting	AVIC
833	Valve Maintenance 1	AVIC
834	Valve Maintenance 2	AVIC
835	Piping Auxiliaries	AVIC
842	Centrifugal Pumps I	AVIC
843	Centrifugal Pumps 2	AVIC
LOW VOLTAGE		
751	Fundamentals of Electricity 1	AVIC
752	Fundamentals of Electricity 2	AVIC
900	Safety in Electrical Maintenance	AVIC
901	Using Electrical Test Equipment	AVIC
902	Reading Electrical Diagrams I	AVIC
911	Single Phase AC Motor Maintenance	AVIC
912	Three Phase AC Motor Maintenance	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV

CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
866	Basic Electronics Unit 1	AVIC
876	Using Electronic Test Equipment	AVIC
913	AC Motor Controller Maintenance 1	AVIC
914	AC Motor Controller Maintenance 2	AVIC
951	Common Home Repairs	HT
952	Contracting a Home 1	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT
BASIC ARC WELDING		
625	Introduction to Arc Welding	TPC
626	Protective Devices and Clothing	TPC
627	Striking the Arc	TPC
628	Running the Bead	TPC
629	Weaving the Bead	TPC
OXY NON-FUSION		
630	Basic Nomenclature	TPC
631	Prepping the Unit for Welding	TPC
632	Light & Adjust Welding Flame	TPC
633	Basic Application	TPC
634	Varying Applications	TPC
OXYACET CUTTING		
635	Setting up the Equipment	TPC
636	Specialized Oxyacet Cutting	TPC

(3E4X3) ENVIRONMENTAL CONTROLS

Test No Tape Title Source

CE GENERAL		
819	Hand Tools 1	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
839	Hazardous Substances	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
829	Print Reading and Use	AVIC
951	Common Home Repairs	HT
952	Contracting a Home 1	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT

(3E5X1) ENGINEERING

Test No Tape Title Source

CE GENERAL		
819	Hand Tools 1	AVIC
820	Hand Tools 2	AVIC
821	Measurement Tools 1	AVIC
822	Measurement Tools 2	AVIC
823	Power Tools	AVIC
838	Fire Safety	AVIC
839	Hazardous Substances	AVIC
CONTINGENCY		
203	Field Sanitation & Hygiene	AFAV
204	Desert Survival	AFAV
205	Cold Weather Survival	AFAV
206	Explosive Ordnance Reconnaissance	AFAV
210	Resource Dispersal	AFAV
212	RRR Philosophy	AFAV
214	Base Denial	AFAV
257	Spall Repair	AFAV
264	Command and Control	AFAV
267	Auxiliary Firefighting	AFAV
CE GENERAL		
728	Powers, Root, and Mathematics	AVIC
729	Algebra and Formulas	AVIC
730	Algebra and Graphs	AVIC
731	Fundamentals of Math	AVIC
732	Using Formulas	AVIC
733	Graphs, Charts, and Tables	AVIC
829	Print Reading and Use	AVIC
951	Common Home Repairs	HT
952	Contracting a Rome I	HT
953	Contracting a Home 2	HT
954	Home Evaluation	HT
955	Preventative Home Maintenance	HT

(3E6X1) OPERATIONS

